## REMARKS

Claims 1-13 are pending in the present application.

The rejections of: (a) Claims 1, 3-4, 6, 8-10, and 12 under 35 U.S.C. §102(b) and/or 35 U.S.C. §103(a) over Smith (US 3,962,500), and (b) Claims 2, 5, 7, and 11 under 35 U.S.C. §103(a) over Smith (US 3,962,500), are respectfully traversed.

The present invention relates to the coated material which gives an appropriate strength, a good light transmission, a good water repelling property and softness, and a flame retarding property to fiber materials (see Abstract). A main material of present invention is an alkoxysilane oligomer which has three hydrolyzable substituents (≡Si-OR) and one unhydrolyzable substituent (≡Si-R).

When the coating solution in which the main material is the alkoxysilane oligomer, which has three hydrolyzable substituents and one unhydrolyzable substituent, is coated on the fiber materials, both hard siloxane bonds (≡Si-0-Si≡) and unreacted bonds (≡Si-R) generate in a coated film.

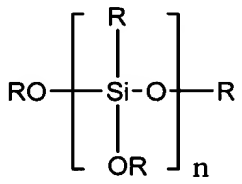
These hard siloxane bonds give a moderate strength and a moderate fire retardant property to the fiber materials. However, since the unreacted part does not produce a bonding with the networks of the generated siloxane bonds, the coated film maintains a degree of pliability. Moreover, the organic property of the unreacted group gives a water repellence to the fiber materials. In other words, the siloxane bond with a moderate strength, a moderate fire retardant property, good water repellency and a moderate pliability can be coated on the fiber materials.

Applicants offer the following summary of the present invention:

(1) The present invention relates to the coated material, in which the alkoxysilane

oligomer is the main material, the hydrolysable organometallic compound is used as a catalyst and these materials are dissolved in a solvent. And the hydrolysis and poly-condensation reactions after being coated on the fiber material are described in detail. The present invention also relates to the coated material which gives an appropriate strength, a good light transmission, good water repelling property and softness, and a flame retarding property to the fiber materials.

The material compound which suits these purposes is realizable only with the Compound 1 shown in present invention.

Compound 1 in present invention:  (see Claims 1 and 8).

(2) Components of the present invention:

1. The main material is the alkoxysilane oligomer which has three hydrolyzable substituents (≡Si-OR) and one unhydrolyzable substituent (≡Si-R).

2. Catalyst: Hydrolyzable organometallic compound.

3. Solvent (isopropyl alcohol) for mixing of the both.

(3) Characteristics of the reaction:

1. Coating solution, which includes above components, is coated on the surface of the fiber materials and then penetrates into the inside of them.

2. Hydrolyzable organometallic compound (catalyst) reacts with water which exists in or on the fiber materials, and then, starts a decomposition reaction.

3. At this time, the alkoxysilane oligomer, which is the main component, reacts with the decomposed catalyst and then hydrolysis and poly-condensation reactions start.

4. Siloxane bond chains, which consequently have a moderate intensity, a good water repellence, etc., are coated on the fiber materials.

(4) Characteristics of the coated film of the present invention:

When the coating solution in which the main material is the alkoxysilane oligomer which has three hydrolyzable substituents and one unhydrolyzable substituent is coated on the fiber materials, both hard siloxane bonds (≡Si-0-Si≡) and unreacted bonds (≡Si-R) generate in the coated film.

The hard siloxane bonds give a moderate strength and a moderate fire retardant property to the fiber materials. On the other hand, since the unreacted part does not produce a bonding with the networks of the generated siloxane bonds, pliability is imparted on the coated film. Moreover, the organic property of the unreacted group gives water repellence to the fiber materials. That is, the siloxane bond with a moderate strength, a moderate fire retardant property, a good water repellency and a moderate pliability can be coated on the fiber materials.

Therefore, the present invention relates to the coated material, in which the main material is the alkoxysilane oligomer which has three hydrolyzable substituents and one unhydrolyzable substituent, the hydrolysable organometallic compound is used as the catalyst and these materials are dissolved in the solvent. And moreover the scheme of hydrolysis and poly-condensation reactions after coating on the fiber materials is clearly described.

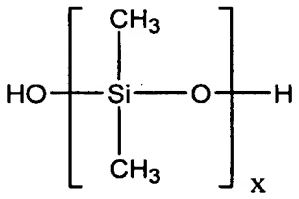
Smith is cited by the Examiner as providing a compound that "reads on the instantly claimed formula 3." Specifically, the Examiner asserts, "when "a" is zero, the compound of formula denoted as reference formula (C) reads on the instantly claimed formula 3." At the outset, Applicants note that "a" is not present in formula (C) of Smith as the Examiner alleges (this character appears on formula (B)). Moreover, Applicants note that none of formulae

(A), (B), and (C) disclosed by Smith are within the scope of the claimed invention (*i.e.*, formulae 1, 2, or 3). For the Examiner's convenience, Applicants provide the following summary of the compounds disclosed by Smith:

(A): compound (A) = polydiorganosiloxane: linear or substantially linear siloxane polymers having terminal siloxane-bonded hydroxyl groups (column 1, lines 65-67).

An average molecular weight of at least 750, preferably 20,000-90,000 (column 2, lines 2-5).

The preferred molecular structures are polydimethylsiloxanes



x = integer

having a viscosity of 100 to 50,000 cS at 25°C (column 2, lines 18-29).

(B): compound (B) = $RSiR'_aX_{3-a}$

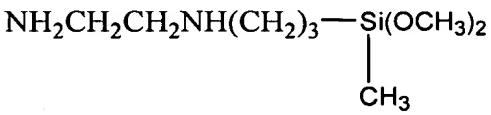
R = C, H, N, optionally, O which contains at least two amine groups and is attached to silicon through a silicon to carbon linkage;

X = alkoxy or alkoxyalkoxy radical having 1 to 14 carbon atoms;

R' = alkyl radical or an aryl radical;

a = 0 or 1 (column 1, lines 43-56).

The preferred molecular structure is:



(C): compound (C) = $R''_bSiZ_{4-b}$

R'' = H, alkyl radical, alkenyl radical, alkenyl radical, alkaryl radical, halogenoalkyl-group,

Z = alkoxy or alkoxyalkoxy radical having 1 to 4 carbon atoms;

b = 0 or 1 (column 1, lines 57-64).

The preferred molecular structure is: $CH_3Si(OCH_3)_3$.

(D): compound (D) = a siloxane condensation catalyst

metal organic compound = metal carboxylate (*e.g.*, tin carboxylate). (column 3, lines 35-50)

The standard for determining anticipation requires that the reference "must teach every element of the claim" (MPEP §2131). Based on the foregoing, it is clear that the disclosure of Smith cannot anticipate the claimed invention. Further, Smith cannot even support a *prima facie* case of obviousness.

In general flexibility is necessary because fiber materials are used. Therefore, it is inevitable that a linear type silane is used. However, the linear type silane used in the art of record lacks a crosslinking property. Accordingly, a silane that structurally has crosslinking properties must be added. For example, Smith employs $R''_bSiZ_{4-b}$ (compound (C)) in 1-20% (column 4, lines 41-50).

In contrast, in the present invention the "main material" is a compound of formula 1, which has traditionally been only employed as a crosslinking material for linear silane compounds. The compound of formula 1 of the present invention has both crosslinking properties and flexibility properties of Si-R4 group remaining in a coated film when this compound is used alone. Further, the compound of formula 1 affords a resultant coated film having an appropriate strength, a good light transmission, good water repelling properties, softness and flame retarding properties (see Table 1, No. 3, 8, and 13).

Therefore, the concentration of formula 1 is at least 50% (*i.e.*, the "main component"). Thus, the present invention is characterized by using formula 1 as the main component (*i.e.*, at least 50%), which has both three hydrolyzable groups (-OR) and one unhydrolysable group (Si-$R_4$). Moreover, contrary to the Examiner's assertion, the compound of formula 1 thoroughly differs from the linear silane compounds having hydrolyzable groups at both ends as described by Smith.

Accordingly, for all the foregoing reasons, Applicants submit that Smith fails to anticipate or render obvious the present invention. Therefore, Applicants request withdrawal of these grounds of rejection.

Applicants respectfully request that the obviousness-type double patenting rejection over U.S. 6,403,183 in view of Marwitz et al be held in abeyance until an indication of allowable subject matter in the present application. If necessary, a terminal disclaimer will be filed at that time.

The objection to Claim 8 is obviated by amendment of this claim to remove the second period appearing in this claim. Withdrawal of this objection is requested.

Finally, Applicants disagree with the Examiner's assertion that the compounds of formula 1 and the compound of formula 3 overlap. Applicants note that the amendment herein to correct the structure of formula 3 obviates any perceived overlap. Further, Applicants note that no overlap exists between formula 2 and either of formulae 1 or 3. Specifically, Applicants note that $R_8$ of formula 2 is an "alkenyl group or a phenyl group which may contain an epoxy group or a glycidyl group in a molecule", whereas the

corresponding position in formula 1 is "hydrogen or an alkyl group having 1-4 carbons." In addition, formula 3 has two hydrolyzable substituents and two unhydrolyzable substituents, whereas formula 2 has three hydrolyzable substituents and one unhydrolyzable substituent.

Applicants submit that the present application is now in condition for allowance. Early notification of such action is earnestly solicited.

Respectfully submitted,

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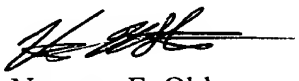

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